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Notice of Allowability

Application No.

10/563,282

Examiner

Gregory A. Wilson

Applicant(s)

WASEDA ET AL.

Art Unit

3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment received 10/4/07.
2. ☒ The allowed claim(s) is/are 1-4 and 7.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Gregory A. Wilson

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Enoch Peavy on November 19, 2007.

The application has been amended as follows:

Please replace the paragraph beginning on Page 2, line 10, of the original Specification with the following amended paragraph:

---Fig. 1 is a schematic block diagram of a horizontal HRSG having a supporting burner inside, wherein the HRSG has a casing 1 that is a gas duct in which exhaust gas G from the gas turbine flows horizontally, the supporting burner 2 is disposed at the inside of the casing 1 at an inlet of the gas turbine exhaust gas G, and at the downstream side thereof, ~~a bundle of a number of heat exchanger tubes 3 are~~ a heat exchanger tube bundle 3 is provided. The heat exchanger tube bundle 3 is generally provided with, in order from the upstream side to the downstream side, a super heater 3a, an evaporator 3b, and an economizer 3c, and in some cases, provided with a reheater (not shown).---

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Please replace the paragraph beginning on line 8 of page 5 of the amended pages of the Application, which were submitted under PCT Article 34 and filed concurrently with the original Specification, with the following amended paragraph:

---The present invention provides a construction method for an exhaust heat recovery boiler which generates steam by arranging a heat exchanger tube bundle 3 within a casing 1 that forms a gas duct for almost horizontal flows of exhaust gas, wherein modules 25 each of which is obtained by housing a member including heat exchanger tube panels 23 each comprising a ~~heat exchanger tube bundle 3~~ plurality of heat exchanger tubes 6 and corresponding headers 7 and 8 ~~of the heat exchanger tube bundle 3~~, an upper casing 20 provided above the heat exchanger tube panel 23, and support beams 22 for the heat exchanger tube panel provided on the upper surface of the upper casing 20 in a transportation frame 24 that is formed of a rigid body and used only during transportation, are manufactured by a necessary size and number according to design specifications of the exhaust heat recovery boiler, structural members for supporting the modules 25, including ceiling part support beams 33 and 34 and side casings 1a and 1b and a bottom casing 1c of the exhaust heat recovery boiler except for the ceiling part are constructed in advance at a construction site, and at the construction site of the exhaust heat recovery boiler, surfaces of each module 25 which will be set perpendicular to the gas flow are set to the upper and lower sides and each module is erected together with the transportation frame 24, each module 25 is extracted from the inside of the transportation frame 24, and the respective modules 25 are suspended from above between adjacent ceiling part support beams 33, whereby

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the heat exchanger tube panel support beams 22 of respective modules 25 are disposed at the set heights of the ceiling part support beams 33 and the support beams 22 and 33 are connected and fixed to each other via connecting steel plates 36, 39, and 40.---

Please replace the paragraph beginning on line 3 of page 8 of the amended pages of the Application, which were submitted under PCT Article 34 and filed concurrently with the original Specification, with the following amended paragraph:

--- Furthermore, the invention provides heat exchanger tube panel modules 25 for construction of an exhaust heat recovery boiler, wherein one module unit [[is]] comprises the heat exchanger tube module 25 which includes ~~composed of~~ a heat exchanger tube panel module comprising a member~~[[,]]~~ including a heat exchanger tube panel 23 which comprises ~~composed of~~ a plurality of heat exchanger tube bundle 3 tubes and corresponding headers 7 and 8 for the heat exchanger tubes 6 ~~tube bundle 3~~, an upper casing 20 provided above the heat exchanger tube panel 23, and support beams 22 for the heat exchanger tube panel provided on the upper surface of the upper casing 20, and a transportation frame 24 that houses the module and is used only during transportation and formed of a rigid body, and the heat exchanger tube panels 23 of the one module unit are provided with vibration isolating supports 18 at predetermined intervals to prevent contact between heat exchanger tubes 6 adjacent to each other in a direction crossing the lengthwise direction of the plurality of heat exchanger tubes ~~bundle 3~~---

Please replace the paragraph beginning on Page 8, line 21, of the original Specification with the following amended paragraph:

---In the invention, in the heat exchanger tube panel module 25 obtained by housing a member including the heat exchanger tube panels 23 each ~~includes the~~ including a plurality of heat exchanger ~~tube bundle 3~~ tubes 6 and headers 7 and 8 for the heat exchanger tubes ~~tube bundle 3~~, the upper casing 20 provided above the heat exchanger tube panel 23, and the support beams 22 for the heat exchanger tube panel provided on the upper surface of the upper casing 20 inside the transportation frame 24, the heat exchanger tube panels 23 can be fixed by the transportation frame 24 and are prevented from being damaged due to shaking during transportation.---

Please replace the paragraph beginning on Page 9, line 12, of the original Specification with the following amended paragraph:

---Furthermore, since the supporting structural members including the ceiling part support beams 33 and 34 and the side casings 1a and 1b and the bottom casing 1c of the HRSG except for the ceiling part are constructed in advance at the HRSG construction site, by using the standing jig 37 and the crane 42, ~~the transportation frame 24 is detached from the heat exchanger tube panel module 25~~ the heat exchanger tube panel module 25 is detached from the transportation frame 24 and the heat exchanger tube panel support beams 22 of each module 25 are arranged at the set heights of the

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ceiling part support beams 33 by being suspended from above between adjacent ceiling part support beams 33, and the support beams 22 and 33 are connected and fixed via the connecting steel plates 36, 39, and 40.---

Please replace the paragraphs beginning on line 8 of Page 25 and ending on line 5 of Page 26 (of the original Specification) with the following amended paragraphs:

---In the invention, by employing a construction in which a part (module frames 24 and 25) of ~~structural~~ strength members including main columns 33 and main beams 34 of an HRSG are commonly used as components of the heat exchanger tube panel modules 20, in a case where the heat exchanger tube bundle modules 20 of the exhaust heat recovery boiler are installed at a construction site, a structure with high installation workability at the HRSG construction site can be applied to joint portions between the modules 20 and between the modules 20 and the ~~structural~~ strength members of the HRSG.

Furthermore, the bottom beams 36 as ~~structural~~ strength members set in advance at the HRSG construction site are made wider than the main columns 33, whereby the installation work labor of the heat exchanger tube panel modules 20 can be reduced, the construction process of the combined cycle power plant can be rationalized, and the local installation costs can be reduced.

Furthermore, after construction of the HRSG, the module frames 24 and 25 serve as a part of the ~~structural~~ strength members of the HRSG such as the main columns 33

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and the main beams 34, so that it is advantageous that members to be scrapped after construction are virtually nil.---

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A construction method for an exhaust heat recovery boiler having a heat exchanger tube bundle positioned within a casing which defines a gas duct in which exhaust gas flows generally horizontally to generate steam, the construction method comprising:

providing a heat exchanger tube bundle comprising a plurality of modules;

providing a plurality the plurality of modules such that each of the modules which is formed by housing include an assembly, the assembly comprising:

which includes a heat exchanger tube bundle, the heat exchanger tube bundle including heat exchanger tube panels, the heat exchanger tube panels having a plurality of heat exchanger tubes and corresponding headers, the assembly including

an upper casing provided above the heat exchanger tube panels, and

support beams configured to support the heat exchanger tube panels, the support beams being provided on an upper surface of the upper casing in a transportation frame that is formed of a rigid body and used only during transportation;
transportation, the

preparing the plurality of modules being prepared according to design specifications of the exhaust heat recovery boiler;

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constructing in advance, at a construction site of the exhaust heat recovery boiler, structural members configured to support the modules, the structural members comprising: ceiling part support beams, side casings and a bottom casing of the exhaust heat recovery boiler; and

at a construction site of the exhaust heat recovery boiler, surfaces of each module which will be arranged perpendicular to the gas flow are connected to upper and lower sides of the boiler and each module is erected together with the transportation frame, each module is removed from an inside of the transportation frame, and each module is suspended from above and between adjacent ceiling part support beams at a construction site of the exhaust heat recovery boiler, such that the heat exchanger tube panel support beams of each module are positioned at the set heights of the ceiling part support beams, wherein the support beams are connected and fixed to each other via connecting steel plates.

4. (Currently Amended) Heat exchanger tube panel modules for an exhaust heat recovery boiler construction, wherein one module unit comprises a heat exchanger tube panel module that comprises an assembly, the assembly comprising: which includes a

heat exchanger tube bundle, the heat exchanger tube bundle including heat exchanger tube panels having a plurality of heat exchanger tubes and, the heat exchanger tube panels having corresponding headers, the assembly including

an upper casing provided above the heat exchanger tube panels, and support beams configured to support the heat exchanger tube panels, the support beams being provided on the

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upper surface of the upper casing, and a transportation frame that is formed of a rigid body and houses the module, ~~and is~~ the transportation frame being used only during transportation;

vibration isolating supports which are provided at predetermined intervals on the heat exchanger tube panels of the one module unit to prevent contact between adjacent heat exchanger tubes in a direction which traverses the lengthwise direction of the heat exchanger tubes ~~tube bundle~~; and

baffle plates configured to prevent gas short pass, the baffle plates being connected to opposing side surfaces of the heat exchanger tube panels along a gas flow direction of each heat exchanger tube panel, the baffle plates extending along corresponding sides of heat exchanger tube panels so as to be adjacent to each other in a direction orthogonal to the gas flow, corresponding gas short pass preventive plates extending between a corresponding side surface provided by one of the opposing side surfaces to which a corresponding baffle plate is connected and a corresponding side surface providing by another of the opposing side surfaces to which a corresponding baffle plate is connected, wherein each of the gas short pass preventive plates contact opposing baffle plates provided on corresponding opposing side surfaces of the heat exchanger tube panel.

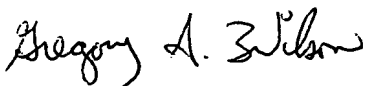
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory A. Wilson whose telephone number is (571)272-4882. The examiner can normally be reached on 7 am - 4:30 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GREGORY WILSON
PRIMARY EXAMINER



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November 20, 2007